Technology Opportunity
Glenn Research Center • Cleveland • Ohio
Technology Transfer & Partnership Office
TOP3–00217

Engine Components Research Laboratory

Facility

The Engine Components Research Laboratory (ECRL) has the capabilities and expertise to perform high-quality and high-performance testing supporting research in combustor and afterburner concepts and small turbine research and development.

Facility Description

This facility is extremely useful to the research community because it provides flexibility of testing a wide variety of test hardware configurations.

There are two separate test rigs that each specialize in a unique area of engine technology research:

Advanced Subsonic Combustor Rig (ECRL–1B) is used to test and evaluate. This facility has supported testing of pulse detonation engine concepts, combustor instability, and material durability research.

Small Turbine Engine Rig (ERCL–2B) is used for turbine engine research. Past test programs have investigated ceramic and brush seal technology, thermal inlet distortions, active vibration control, and digital fuel control techology.

Facility Benefits

- Full-scale combustor rig with flexiblity to test a wide variety of test hardware configurations
- 150 psig combustion air up to 60 lb/sec
- Altitude exhaust simulation up to 50 000 feet
- Gaseous hydrogen and oxygen testing capability
- Accommodates in-house and private industry research programs
- Experienced staff of technicians, engineers, researchers, and operators

Commercial Applications

- Aircraft engines

Programs and Projects Supported

- Joint Strike Fighter Augmentor Development
- Rocket-Based Combined Cycle (RBCC)
- Pulse Detonation Engine (PDE)
- Combustor Instability Research

T–55 engine test.

Capabilities

Combustor Facilities—ERB, ECRL, ASCR, and RCL					
Facility	Test emphasis	Maximum pressure, (psig)	Maximum airflow (lb/s)	Nonvitiated heated air, °F	Maximum exhaust temperature, °F
CE–5B–1	Sector	60 to 275	2 to 12	500 to 1350	3200
CE–5B–2	Flametube	60 to 400	0.6 to 5	500 to 1350	3200
CE–9B–A	Sector	120 to 450	5 to 30	750 to 1100	3400
CE–9B–B	Flametube	120 to 450	1 to 15	750 to 1100	3400
ASCR Leg 1	Sector	50 to 900	3 to 50	500 to 1200	3400
ASCR Leg 2	Flametube	50 to 900	1 to 10	500 to 1200	3400
ECRL–1B	Augmentors	5 to 150	5 to 60	100 to 600	1900
RCL	Flametube	0 to 350	0.5 to 4	500 to 1200	3000

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Facility Testing Information

http://facilities.grc.nasa.gov

T–700 engine test.